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AUTHOR Brody, Celeste M.; Hill, Leslie Rennie
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ABSTRACT

This is an exploratory, descriptive study of experienced elementary, middle, and secondary school teachers who participated in a 9-month cooperative learning training project which was designed to encourage reflection upon their beliefs and assumptions about their pedagogy. Fifteen teachers were interviewed to understand how teachers modify cooperative learning to fit their existing beliefs about pedagogy; how teachers interact with this innovation to reconstruct their assumptions about teaching and learning; and how these reconstructions affect certain pedagogical themes which emerged from them. Themes which emerged were: conceptions of their role, their sense of authority and locus of control, their notions of the nature of knowing and knowledge, their conceptions of their decision-making, their understanding of cooperative learning, and their resolution of the dilemmas of practice which emerge for them in the process. Using a model which defined three broad epistemological orientations, or meaning systems, operating on a continuum from "transmission" to "transaction" to "transformation," which cast educational practices as systems of belief, the mainstream models of cooperative learning were analyzed for their fundamental assumptions regarding these themes. (Author/IAH)

COOPERATIVE LEARNING AND TEACHER BELIEFS ABOUT PEDAGOGY

Celeste M. Brody

Teacher Education Box 14

Lewis and Clark College

Portland, Oregon 97219

503-768-7772

With Leslie Rennie Hill, Portland State University, Portland, Oregon

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Celeste M. Brody

ABSTRACT

This is an exploratory, descriptive study of experienced elementary, middle and secondary school teachers who participated in a nine month cooperative learning training which was designed to encourage reflection upon their beliefs and assumptions about their pedagogy. 15 teachers were interviewed to understand how teachers modify cooperative learning to fit their existing beliefs about pedagogy; how teachers interact with this innovation to re-construct their assumptions about teaching and learning; and how these reconstructions affect certain pedagogical themes which emerged for them: Conceptions of their role, their sense of authority and locus of control, their notions of the nature of knowing and knowledge, their conceptions of their decision-making, their understanding of cooperative learning, and their resolution of the dilemmas of practice which emerge for them in the process. Using a model which defined three broad epistemological orientations, or meaning systems, operating on a continuum from "transmission," to "transaction" to transformation" which cast educational practices as systems of belief, the mainstream models of cooperative learning were analyzed for their fundamental assumptions regarding these themes. The model was useful in giving coherence to a teacher's prevailing orientation, as well as identifying the assumptions of particular educational practices.

This paper uses a constructivist framework to consider how experiences, values and beliefs create a set of assumptions or schema which guide a teacher in interacting with new ideas and practices. It addresses the inadequacy of the current literature on teacher change and cognition in understanding how teachers make sense of a practice which is risky for teachers because it requires a shift in sensibility.

The teachers in this study held a remarkable similar range of beliefs about the pedagogical themes which emerged for them during the 9 month training in cooperative learning. Their views about education were consistent with a transactional approach; however, most of the teachers were in transition, that is, they held beliefs and values about their pedagogy indicative of traditional thinking but with emerging values consistent with transactional epistemologies. Conclusions include recommendations for inservice training for teachers which provides a forum to address the connections between the educational assumptions implicit in the innovation itself and those of the teacher engaged in the adoption of the practice.

INTERPRETATIVE FRAMEWORK

This exploratory, descriptive study draws upon the areas of cooperative learning, teacher change, and teacher cognition and reflection. It seeks to understand how teachers modify cooperative learning to fit their existing beliefs about pedagogy; how teachers interact with this innovation to re-construct their assumptions about teaching and learning; and how these reconstructions affect their views of their role, their notions of the nature of knowing and knowledge, their very understanding of cooperative learning, and their resolution of the dilemmas of practice which emerge for them in this process.

Gordon Pradl has argued that advocates of cooperative learning need a better picture of "the contradictions and discomforts experienced by teachers who are attempting to manage their complex classroom realities in new ways, for in schools, as in all areas of life, new routines and procedures involve disorientation and self-questioning." (1990, p. 13). Changing to a cooperative, or a collaborative perspective, requires a shift in *sensibility*, a shift in fundamental assumptions and beliefs about learning, knowing and authority. Experiences, values and beliefs create a set of assumptions or schema, which guide a teacher in interacting with new ideas and practices. According to constructivist theory, individuals are constantly creating their own meaning out of what is perceived (Greeno cited in Sparks-Langer & Colton, 1991). Through a process of assimilation and accommodation (Piaget, 1978) the teacher will constue the innovation to fit with existing beliefs while, at the same time, transforming and reconstructing their assumptions and beliefs to fit the emerging perceptions of their actions and those of their students. Through reflection teachers can examine their own assumptions and beliefs to become self-conscious, that is, aware of their own and others' perspectives on their inclinations and actions.

Although certain models of cooperative learning may *require* a shift in epistemology, teachers will approach this innovation largely in terms of their given beliefs. For many there will be a marked congruency with the practice; for others, it will not "fit" at

all, or they will modify the practice to fit their existing beliefs. Finally, many teachers will change their old mental organization to incorporate the new assumptions that accompany this practice, but these may cause dilemmas or contradictions of practice between the prevailing or dominant epistemology of the organization and their emerging one, or between old and new epistemologies within their own schema.

Conceptions of Cooperative Learning

Cooperative learning has become one of the most frequently espoused new approaches to education, and as such, large numbers of practicing teachers have been inserviced in this area. There are, however, variations in the analysis and interpretation of cooperative learning,[1] a term which includes team based, extrinsically rewarded, instructional management programs as well as models of cooperative learning embued with explicit values regarding personal, organizational and social change. The different models of cooperative learning can be analyzed for their fundamental assumptions regarding authority and control, the nature of knowing and knowledge, and conceptions about human interaction (Meyers, 1989; Sapon-Slevin, 1990).[2]

Miller and Seller (1985) have identified three broad epistemological orientations, or meaning systems, operating on a continuum from "transmission," to "transaction" to "transformation" which cast educational practices as systems of belief and which apply also to models of cooperative learning. This model can give coherence to understanding a

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[1] I have not specifically separated cooperative learning from collaborative learning. For the purposes of this paper, I am using cooperative learning to refer to all those approaches which construct learning through teamwork, and which attend to the consequences, both academically and socially, of the effect of community or its lack thereof. The technical/transformative model for analysis of educational approaches does attempt to articulate distinctions, however, within cooperative and collaborative learning, especially in terms of how "intentions, tasks and ownership are negotiated across the curriculum", and in the fundamental assumptions about authority and knowledge (Pradl, 1990, p. 15).

[2] I am indebted to John Myers, history and social science consultant, Toronto Board of Education, for the work he has done with curriculum orientations and teacher beliefs. His model was presented at the Second annual Cooperative Learning Symposium in Oakland, CA, January 31, 1990.

teacher's prevailing orientation, as well as identifying the assumptions of particular educational practices such as cooperative learning.

The transmission approach

The transmission model, as the name suggests, promotes the aim of education as the transmission of knowledge to students in the form of facts, skills, concepts and values. This position, sometimes referred to as a "technical" orientation (1985; Gitlin, 1990; Taylor, 1990) is often regarded as the traditional one. Students are viewed as acting in a generally passive mode in which they respond to a structured learning situation, usually initiated by the teacher, who plans and sequences materials so that the students can proceed through the units. Teachers play a strong, directive role in students' learning and in determining how students spend their time. Knowledge is construed as "an objective body of information whose existence is unrelated to human subjectivity, and schools must transmit this knowledge intact, i.e., free of error, to the learner" (Sharan, 1990, p. 35). Content is, therefore, relatively fixed and the focus is on public knowledge, usually gathered from texts or standard sources. There is an emphasis on external rewards and external reinforcers, usually with little room for individual differences; students are considered competent or successful when they have mastered the curriculum.

Cooperative learning within a transmission view would generally leave the essential nature of content, learning and knowledge unchanged and unchallenged from traditional constructions. This approach generally encourages a view that cooperative learning can be mastered through discrete strategies to solve any number of educational and pedagogical problems. Within the cooperative learning movement, this orientation has been reflected through the development and use of some highly structured techniques such as STAD and TGT which uses team practices to achieve narrow academic ends--the teaching of a standard curriculum with a largely teacher-centered approach. It can refer, however, to any construction of cooperative learning whose aims are to leave these fundamental

assumptions unchallenged, particularly in relation to the nature of knowledge, authority and human interactions.

The transactional approach

In the transactional orientation, education is construed as a dialogue between the student and the curriculum and the student as a problem-solver. The aim is the development of intelligence in general, and development of complex problem-solving skills in particular. Learning can occur within any number of frameworks of an academic discipline, or through an interdisciplinary approach, or within a social context. The teacher is a facilitator who provides appropriate resources and questions for inquiry. Social skills for a democratic society are as important as acquisition of complex intellectual frameworks. Students share control of the learning because students need opportunities to experiment and try out different solutions to a problem. While there may be a reliance on public knowledge it is not considered to be fixed or immutable, and knowledge is viewed in relation to the knower; it is a process related to the various modes of inquiry of the disciplines and as such is an integral aspect of content. Motivation is oriented towards the intrinsic, that is, the individual needs to resolve problems, but the environment needs to support problem-solving. As in the Piagetian framework, each student's level of development is considered in relation to the learning activities.

What also distinguishes transactional models of cooperative learning is the degree of structure associated with the teaching of cooperative skills, the importance of the nature of the dialogue and discourse, and the view of motivation and control in learning. Academic achievement is not in contradiction with social goals and values, in fact, learning social goals and values enhances the classroom environment and, hence, the context for achievement. Teachers consider the impact of cooperative learning on the scope and sequence, depth and breadth of learning.

Cooperative learning models which promote the dialogue between teachers and students and students with students, and view learning as a process of negotiation with the

curriculum to develop a shared view of the world, reflect this orientation (Johnson & Johnson, 1986; Aaronson,1978 ; Cohen, 1986; Gibbs, 1987). The teaching of social skills and the commitment to expressing prosocial values is equally important; the role of the teacher is often expressed as one of facilitator of the learning environment.

Transformational approach

In the transformational approach, the aims of education are social change and personal actualization. Learning focuses on the integration of the physical, cognitive, affective and spiritual dimensions, and the teacher's role is to link cognitive skills with these aspects of life. Students have as much control as possible over their own learning so that they can become self-motivated, self-directed problem solvers. Because knowledge is not separate from the individual, it is rooted in personal meaning systems. New knowledge is the *effect* of community (Britten, 1990), where texts or curricula emerge from the collective experiences of the learners. Multiple perspectives are cultivated and promoted and subject to further exploration through collaboration and dialogue. This model draws upon the theories of Dewey, Piaget and Vygotsky, and is expressed, for example, in the work of Shlomo Sharan, Kenneth Bruffee, James Britten, and Frank Smith.

Cooperative learning from the transformational approach emphasizes the *aims* of learning. For example, cooperative learning may be considered as a developmental stage towards a wholesale philosophical change in the way teachers and students structure their classes, and ultimately, how schooling is structured (Myers and Taylor, 1983; Kohn, 1986; Sharan, 1983). Proponents of cooperative learning who share this orientation often advocate cooperative learning as providing an ideal entree into the exploration of the "possible" in education and opportunity for considering the moral ramifications of education:

> Cooperative learning can provide a framework for thinking about how power is allocated, how decisions are made, how multiple perspectives can be heard and

validated. Cooperative learning can allow us to create participatory communities, classroom models of democracy, spaces for discourse and the critical examination of the ways in which certain voices are silenced by our current models of schooling and government (Sapon-Shevin,1990).

Other advocates of cooperative learning within a transformative approach may frame the political and social aims less explicitly. Significant in this view, however, is the belief in the process of collaboration whereby there is a shift in *sensibility* on the part of teachers as they honor the authority of the learner; participation and engagement in the events is the basis for meaning construction, and is extracted and shared in part with others. In this view teachers need considerable time, support and opportunities to reflect upon and critically integrate new practices into their pedagogy (Boud, Leigh & Walker, 1985; Shon, 1987). The emphasis, however, is as much on the development of the community of learners and inquirers as upon the individual teacher's construction of meaning.

Proponents of cooperative learning vary in the degree to which they make explicit the value and belief orientations of the instructional practices which enact different constructions of teaching and learning relationships and outcomes. Cooperative learning has sometimes been considered a "generic" teaching strategy, adaptable to any teaching situation, or any philosophy. While there is an element of truth in this view because teachers do assimilate and accommodate the practice, this argument ignores the important issues for implementing cooperative learning in schools. How effectively cooperative learning can be implemented[1] will depend partly on the particular assumptions about education which the teacher or the institution brings as well as the match between the

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[1] I define effectiveness herein as whether cooperative learning moves away from the prevailing technical/traditional assumptions about educational practices rather than simply serving the existing order; however, I acknowledge the need to recognize and respect the prevailing epistemologies of teachers which may mean starting from a technical position.

models one chooses to implement or is expected to implement, and one's epistemology. While many cooperative learning training programs are well-grounded in research and theory, they often do not provide adequate opportunities for teachers to reflect upon the range of implicit assumptions in the innovation in relation to their own epistemologies and personal constructions. In the midst of being prescriptive about pedagogy, as Kelly stated, we need to be descriptive, "reversing the habit of asking the (teacher) to answer our questions rather than noticing the nature of the questions he is asking" (Bennester and Fransella, 1971, p. 82).

Teacher Change regarding beliefs about practice

Much of the literature on teacher change relates to the question of why innovations are not implemented as their developers anticipated, examining individual teacher change mostly in terms of whether teachers have responded to externally mandated change attempts. In this view teachers are more often characterized by their resistence to complex, conceptual, longitudinal changes as opposed to change in management routines or temporary changes. (Duffy and Roehler, 1986). These studies of change have either focused on the structural aspects of the organization, or school-level features such as teacher collegiality, instructional coordination and other factors affecting teachers' perceptions of their skill acquisition (Huberman and Miles, 1984). These approaches are consistent with a technical model of education which views any learner, albeit a teacher or student, as subject to a preordered direction of change, usually not decided by those for whom it is designated. Several have argued, on the other hand, that a change deemed by others on rational grounds as good for teachers may not fit individual teachers' intuitive and nontechnical sense of what they should be doing (Richardson, 1990).

Others who have focused on the beliefs, knowledge, attitudes and perceptions of teachers in inhibiting or promoting their adoption of new practices have concluded that teachers' beliefs about how students learn and what they ought to learn had the greatest impact on what teachers did in the classroom and whether they changed (Doyle and

Ponder, 1977; Tobin, 1977). Research on teacher thinking (Clark and Peterson, 1986; Cuban, 1988; Nespor, 1987) demonstrated that teachers' theories and beliefs about the teaching-learning process play an important part in determining the nature of their roles in the classroom, and directly affect many aspects of their professional work (Taylor, 1990). Changing teacher beliefs can be difficult, for example, because teachers tend to construe innovative designs through their more familiar, established practices in their attempts to overcome perceived contradictions and discrepancies associated with their beliefs (Olson, 1981; Taylor, 1990). Thus, many innovations avoid the issue of changing teacher beliefs because it is a very complex matter. Imbedded in this issue is the fact that new programs or pedagogies assume that adopting the particular practice is good, and success is assessed by the congruency between teachers' behaviors and the standards for that practice, or in terms of pupil achievement and other measures. Not addressed are the connections between the educational assumptions implicit in the innovation itself and those of the teacher engaged in the adoption of the practice. Training programs, however, should encourage teachers to critically examine the innovation in light of their existing beliefs, assumptions and dilemmas of knowing which the innovation poses for them.

This study follows a program which assumed that teachers beliefs about their pedagogy would change, but we did not assess the nature of those beliefs regarding the innovation at the beginning, nor did we enforce a particular set of beliefs about the practice, in this case, cooperative learning. Rather, the program and the study were exploratory in nature, seeking to understand and explicate those beliefs and values which the participants did hold regarding cooperative learning and the nature and direction of any changes.

Teacher Cognition and Reflection

The research on teacher cognition suggests the need for attending to what Cuban calls second-order change, the more fundamental aspects of teachers' beliefs about teaching and learning (1988). The change process (i.e., the materials, thoughts, theories, or practices one would like to introduce to teachers) should be introduced with regard to how

these will affect teachers. Issues of control relating to the innovation itself, the context of the change, teachers' histories and biographies, and the nature of the learning situation should be considered as "text" for the process of change, recognizing that the practice under consideration may be altered quite dramatically due to teachers' beliefs, and that these beliefs may be subject to socially negotiated processes respectful of conceptual change. Teachers should have as much control as possible in the adaptation of the particular content of the change; the practical knowledge and value premises held by teachers should become grist for reflection.

Facilitating and understanding teacher change requires that a teacher's existing knowledge and beliefs be the starting point for a socially negotiated process of conceptual change (Kelly, 1955; Glaserfeld, 1987). Knowledge cannot be separated from the knower; it does not exist as an independent commodity that can be transferred from one knower to another knower, but knowledge is, rather, a socially negotiated process (Taylor, 1990). Change occurs through collaborative relationships of mutual respect and regard wherein teachers, researchers and trainers can evaluate the viability of their pedagogical beliefs, knowledge and classroom action. Therefore, the problem is not one of change or nonchange as Richardson suggests (1990); it centers on the degree to which teachers engage in the dialogue concerning the warranted practice, their own beliefs, and their justifications. It means that teachers, trainers and researchers need to interact around standards, theories and classroom activities with the possibility that different conceptions of practice may emerge than initially assumed.

The value premises that teachers hold toward their work, including their own stance toward knowledge, both within a discipline and toward the student as a knower, are important and significant knowledge. Lyons' work explores people's ways of knowing and directly connects them to questions of value--to people's ethical ideas of right and wrong, views of truth, and notions of knowledge, whether, for example, a teacher views curriculum as fixed and given, and thus knowledge as acquisitional, or whether all

knowledge is a human construction, and hence, all participants become co-constructors of knowledge together within communities of inquiry. While different epistemological positions can be identified, Lyons suggests that the teacher can hold various stances toward knowledge and authority, truth and ways of knowing; individuals can hold various epistemological perspectives; that such perspectives may change over time, and that, within a given epistemological perspective, approaches to knowing may vary. Issues regarding practice are experienced by teachers as dilemmas of teaching and are not solvable but must simply be managed. These practical conflicts involve the self, usually include the teacher's relationships with students, and are considered ongoing or recurring (Lyons, 1990). Innovations or practices which represent great departures from teachers' fundamental pedagogical beliefs may pose particular contradictions and dilemmas for teachers which may only be resolved through a dialogical and supportive context, with opportunities for making basic educational orientations explicit. Equally of interest is whether certain models of cooperative learning represent such great departures for teachers' beliefs that they must be categorically rejected by these same teachers. Because cooperative learning requires so many new and different kinds of decisions on the part of the teacher, it is perceived as very risky. Teachers report that at first they feel divested of a kind of ownership or prerogative. The authority arrangements in the classroom are suddenly exposed . Cooperative learning challenges teachers' fundamental conceptions about human interaction and pose dilemmas because it departs from prevailing practice. It separates teachers who move toward this approach from their colleagues who do not, and strains professional relationships because the shared norms and expectations have changed; dialogue between colleagues becomes difficult. One can expect resistence when contradictions are so many.

Shulman (1986) and Anning (1988) point out that experience is educative only with reflection. Reflection, the reconstruction of experience (Pubach & Johnson, 1990) informed the design of the cooperative learning training in this study. Teachers in this study reported difficulty in changing their pedagogy given their teaching histories, lack of

training, and other organizational constraints. That is why they initially self-selected into this 9 month program, but most of them had only a vague idea of what reflective practice was when the program began. Certainly, it was not a common expectation in their previous training programs. Reflective practices allow a teacher to recast situations once they have been clarified, rethinking the assumptions on which the initial understandings of a problematic issue were based, and reconsidering the range of possible responses he/she might use. These practices might begin with readings about cooperative learning which suggest alternative views of the educational process, followed by journal writings in which the teacher records actual events of practice. Peer groups and seminars are designed to discuss these practices, bringing forward the uncertainties and making beliefs explicit. Obserg describes the changes this process can bring about in students, namely the ability to identify specific ways in which their practice may become more consistent with their beliefs and values about what is educationally good (1986).

METHODOLOGY

Profile of Participants

This descriptive study followed 25 teachers/administrators (K-12) who participated in a nine month training program in cooperative learning. Teachers and administrators self-selected into the program and enjoyed sponsorship by their districts. They were expected to have had a basic training in cooperative learning and to be using cooperative learning at least 10% of the time. The intention was to draw teams of teachers/administrators from the 7 participating school districts who would have the commitment and capability to work together at their sites to support one another's efforts during the year and beyond. None of these expectations were met entirely by the group. The group's previous training in cooperative learning included people with several years experience who were now training others, but the majority of the participants had taken only a weekend workshop on cooperative learning using the Johnsons' conceptual approach. Two schools were able to

send teams of more then 2 people; most teachers came from districts where they had little time for contact with one another between the regularly scheduled meetings.

Table 1 PROFILE OF PARTICIPANTS N=25

Number of years in education: 6-10 yrs (5); 10-20 yrs (15); 20+ yrs (5)

Present employment grade level: K-5 (10); 6-8 (6); 9-12 (3); K-12 Administration (6)

Length of Time Using Cooperative learning : 1-2 yrs (12); 2-4 yrs (11); 5+yrs (2)

Percentage of Instructional Time using Cooperative Learning (Self Reported):

10-30% (12); 30-60% (11); 60%+ (2)

Subjects Taught:

General Elementary (8)
Language Arts Elementary. (1)
Middle School Social St./Language Arts (1)
High School Social Studies (1)
Math Elementary (1)
Middle School Science (5)
High School Art (1)
High School ESL (1)
Administration, including principals and district curriculum (6).

Cooperative Learning Training Design

Teachers came voluntarily and with the initial expectation of at least gaining proficiency at integrating cooperative learning into their teaching repertoire. The Cooperative Learning Program (CLP) was designed so that the participants would experience three mainstream cooperative learning models: David and Roger Johnsons' Conceptual Approach, (Johnson, Johnson & Holebec, 1986) Spencer Kagan's Structural Approach (Kagan 1989), and Robert Slavin's Team Approach (Slavin, 1983), with opportunity to assess each approach and to practice in their classrooms.

In addition, participants read Elizabeth Cohen's Designing Groupwork (1986), reviewed Jean Gibbs' Tribes program (1987), and Sharan's Group Investigation (1976). They read research drawn from the collaborative learning tradition, the fields of cooperative learning, teacher change, and reflective practice. Within the context of monthly meetings there was opportunity for ongoing dialogue and reflection with one another. Questions

about the models were actively solicited and became grist for further inquiry. Teachers were encouraged to analyze each of the new cooperative learning models in light of their emerging classroom practices and the dilemmas and problems which these posed. They were invited to make explicit their assumptions and beliefs about their classroom practices, and were asked to consider the congruency between these cooperative learning approaches and their existing practices. Teachers demonstrated cooperative lessons to the participants, shared curriculum and directed the content of the meetings.

Data Source

Journals and a highly interactive seminar environment were used to promote reflection about the nature and philosophy of cooperative learning. Teachers documented training and observation experiences, reacted to new ideas and techniques and assessed their growth and change. Journals were analyzed at 3 points in the training. The dominant themes regarding their pedagogy (i.e., nature of knowledge and knowing, locus of control and sense of authority, teacher role, decision making, conceptions of cooperative learning and relationship with colleagues and administration) were drawn from journal entries and class discussions and formed the basis for developing an in-depth interview study with 15 of the participants during the six months following the training.

This study consisted of an open-ended interview schedule of questions (See Appendix A) addressing each of the foregoing themes. These interviews were conducted within 6 months after the training ended. From the initial group of 25 educators, fifteen were interviewed by two investigators, one a participant in the training program,[1] the other, the program coordinator. Selection of interviewees was random, was representative of both teachers and administrators, and was determined in large part by scheduling constraints as all worked to find one to two hour blocks of available time in the lives of busy people.

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[1] Leslie Rennie-Hill was co-investigator during the interviews.

FINDINGS

It is difficult to generalize about the assumptions and beliefs of the teachers and administrators in this study although these teachers held a remarkably similar range of beliefs about the themes of authority, the nature of knowledge and conceptions of cooperative learning. Most teachers in this study would perhaps best be characterized as *transitional*, that is, people who are moving away from completely traditional constructions of education to those described as transactional and, only occasionally, transformative. Teachers often used traditional practices and, at the same time, drew upon the theories also fundamental to transformative approaches such as Piaget to explain their goals. Teachers in this group held largely transactional constructions of educational assumptions with seemingly contradictory notions of these themes. Each teacher has a mental "grid" of interacting, implicit beliefs which are currently shifting, but which are more traditional and transactional in form than they are transformative. These following categories represent the generalized themes which emerged from the interviews; they are not necessarily exclusive nor separate in the teachers' thinking. The tables characterize the range of beliefs teachers consistent with the three curriculum orientations of Miller and Seller (1985). The dotted lines indicate my interpretation of the range of teachers' constructions described in the interviews relevant to that particular theme.

Locus of Control and Sense of Authority

Technical	Transitional/transactional	Transformative
Teacher-Centered Authority for knowledge rests primarily with the teacher.	Learner-Centered Teacher is authoritative not authoritarian. Authority for knowledge is shared with students but conditions for learning are initially and primarily a responsibility of the teacher's.	Constructed communities Authority is derived from the community. Teacher has certain responsibilities by virtue of her role but is primarily concerned with the effect of community---creation of new knowledge
Teacher plays a strong, directive role in students' learning and in determining how students spend their time.	Teacher and students are co-learners with goal to increase student responsibility for conditions of learning and climate of the classroom.	Multiple perspectives are valued and necessary for dialogue. Students are capable of defining the conditions of learning.
Notions of control extend to discipline, and setting pace of the learning. Teacher is primarily responsible for all aspects of learning and learning conditions. Extrinsic rewards are valued as necessary in most situations.	Issues of control are complex and contextual. Extrinsic rewards are valued for short term objectives, the goal being to assist the learning to become more intrinsically motivating.	Power and control are issues subject to discussion, critique and analysis. Motivation, aroused by a sense of control and efficacy, is essentially intrinsic, independent of external reward and providing its own reinforcement.
Conflict is to be avoided.	Conflict is manageable and understandable	Controversy is welcomed; conflict can be structured and understood.

When teachers first adopt an innovation which is a marked departure from previous practices their first concerns are about classroom management and issues of control. Issues of control posed the most frequently described dilemmas for the teachers adopting cooperative learning and required them to re-construct not only their practices but their *notions* of control and authority. For the teachers new to cooperative learning initial journal entries and the first few sessions centered on how to manage groups of students, whether and when to give extrinsic rewards, how to just begin the process of groupwork such that classroom conditions would not become chaotic and move beyond their comfort-levels for distractions. Indeed, teachers often compared their responses to these questions to their earlier years of teaching in an attempt to clarify their thinking and their current practices.

As teachers grappled with these issues and began to consider the congruency of cooperative learning to a "learner-centered" environment, the teachers revealed complex constructions of their understanding of the issues regarding control and authority in the classroom. They redefined teacher control as a function of *structure* over the conditions for learning. They confronted their comfort and discomfort with ambiguity, assumptions regarding diverse thinking and multiple approaches to learning as students departed from their notions of how they should be behaving and performing. Most of these teachers began to develop a new *purpose* for teaching which was to move the center, or locus, of control for an activity in the direction of the students. For some, cooperative learning gave them tools to enact their beliefs and philosophy which had shifted *before* they came upon cooperative learning.

> SC: Teachers can be in control (with cooperative learning). It depends on what you want to be in control of. Really setting up cooperative groups doesn't mean a teacher totally abdicates control in the classroom. In some ways, the teacher has to be more in control, in terms of structuring the groups, and setting some parameters, and some guidelines, and some clear expectations, but you can't control the outcome. You can't control the learning. If I haven't learned anything else this year (during my sabbatical leave), I'm learning that it's the kids who create learning from themselves. It's internal; and there is no way I can make a kid learn. There's a lot I can do to set up a more ideal situation, or situation that is favorable to a kid's constructing some meaningful learning.

For many of the teachers the goal of their structuring was to promote more student-directed learning and inquiry. Their descriptions of control and authority ranged from those one might describe as transitional: holding both technical and transactional values simultaneously:

> MK: I'd probably say I'm authoritative, but not authoritarian. I think for the teachers who don't feel the need to be "in charge," be in control, it's (cooperative learning) a comfortable way to teach. But if I felt it would be reflected on me if students were out of their desks--because with cooperative learning they probably would be--if having a quiet classroom is important, it could feel out of control. I was observed last year, and I had a big class. In my evaluation she put, "Ms. K's classroom is not quiet, but it is controlled."

A few teachers indicated that they had not thought much about these issues until they had cooperative learning training, but the first concerns which faced them as teachers after training were the issues of how they defined control and authority as they began

reinventing their teaching repertoire. For example, this middle school teacher took comfort in her planning and organization, defining control in terms of the structure of the situation she was able to provide through written directions:

> AO:When the teacher loses the authoritarian role, the control comes on paper, and that paper depends on how well that teacher has organized the cooperative learning lesson. If it's not organized well, then the kids will be out of control. So you need to organize your lesson, and that's where your control is. Then kids will have the control within that paper.

Many of the teachers said that it was difficult yet exciting to witness the shift of activity toward the student, and to experience less predictability in the learning outcomes. A teacher who has been working toward a cooperative classroom for over three years explained:

> SC: I get very excited when I see kids sort of taking charge. At the same time, it does create a little discomfort for me, because I know that I've been used to being in control. One of the things about putting kids into groups, is that you never know what's going to happen and you have much less control. You are setting up a much more potential volatile situations, not just in the sense that they may get into an argument, but volatile in that their direction of their learning can just go anywhere.

Most teachers still felt uncomfortable when conflict emerged among students but they saw it as natural and inevitable in an interactive classroom. The teachers believed they were able to handle most interpersonal conflict which arose. Only a few welcomed structuring academic controversy at this stage.

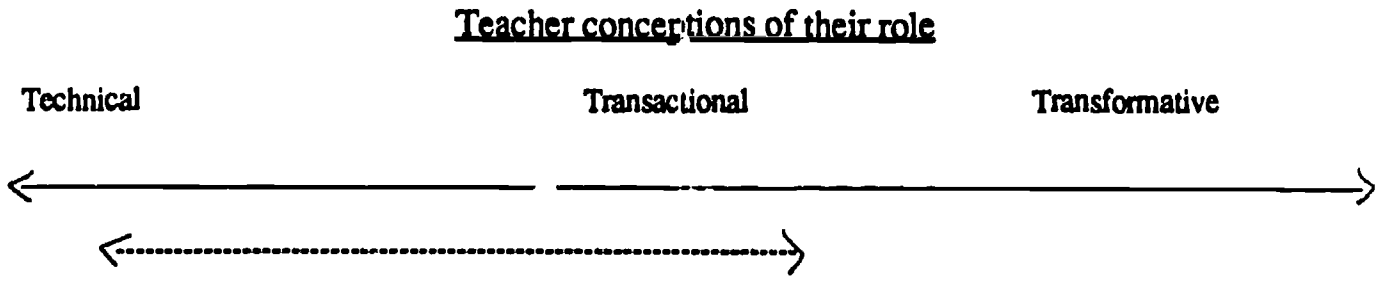
Teachers expressed a shift in their notions of control and authority since beginning cooperative learning, but the shift was subtle, indicating that there was already a high congruence with their conceptions of the goals of cooperative learning and their notions about control and authority. Most teachers, however, had not considered the notion of "student-centered" or "learner-centered" classroom before having cooperative learning unless they had already developed a highly articulated philosophy which centered on these values, such as whole language or a child-centered classroom. For almost all the teachers having a mental image of a learner-centered environment as opposed to a teacher-centered classroom clarified their goals and provided them with language to assess their practices

more clearly. Their conceptions about control reflect a movement away from the technical end of the continuum to a more transactional view:

> CV: I have a hard time separating cooperative learning and whole language, because it all kind of started happening at the same time. I was training in ESL to do the old audio-lingual method. It's all drill and practice with the teacher in front being the focus. I have been evolving away from that, and cooperative learning has helped me evolve away from it by putting the kids in their pairs and letting them work through things. And I believe I need to do direct instruction (also), because I need to model good language.

Teachers, however, may still use metaphors indicative of traditional constructions for wont of alternatives, but at the same time their views reflect more emerging approaches. As one teacher said,

> Before I had cooperative learning I had some techniques, but I could not picture what a cooperative classroom would look like. But now I see opportunities for using cooperative learning. Whenever I'm presented with a problem in the classroom it just seems to pop up. I ask myself, "Is there a way I could deal with this situation where the kids could have more control over what's happening?"... But there is a time when I'm in absolute power. It just has to be that way. Personally, I believe a child at this age needs very specific boundaries, and I have them well defined, but within that framework, we have a lot of freedom. Hopefully, depending on the child, too, they have freedom to bring up issues, even if it's with my teaching, or with the substitute I may have, or whatever. So, I'm a tyrant here in my own room, in some areas; but I think these are pretty much defined, so the kids have freedom within it. I don't know how else to define it.



Intimately connected to beliefs about control and authority were the teachers' conceptions of their roles. Teachers used metaphors to describe how they see their role as a teacher; many talked about moving from a conception of themselves as one of a performer in a teacher-centered environment, to one of a facilitator in a student-centered environment. This shift in their thinking occurred in almost all cases *before* they began working with cooperative learning and represented a deeply held belief about their relationship with students and knowledge.

> BF: One of the reasons why I like it (cooperative learning) is you get to work very closely with the kids; it becomes very interactive. Instead of simply being a person who stands up on the front of the room, it's a much more humane and human way of teaching...I move from group to group. I sit with them. I've got kids in here with a lot of big problems and you want to be able to sit and talk with those kids, and know in the back of your mind, well, maybe this is the reason why things are happening. You want to know about these things. You just can't separate yourself.

Having views of their role consistent with a transactional view makes cooperative learning particularly attractive and desirable. Since beginning cooperative groupwork, however, teachers saw themselves as becoming better *observers* and assessors of students

and the learning process. They indicated an ability to handle more complex information about students and welcomed this information because it informed their decision making.

> DB: I get people started in the lesson by giving them what they need to get going, and then I turn them loose. When I turn them loose is when I see the goal completely changing from what it had been in the past. I now become an observer of what's going on, a facilitator of what's going on, an intervener of what 's going on if there are problems that are occurring--either lack of content knowledge, or lack of direction on the part of the kids of what they're really supposed to be doing, or a lack of being able to work together with one another to solve whatever a situation requires

Teachers consistently described themselves as "facilitators," "orchestrators", or "encouragers" of learning. This teacher integrates her concern for control:

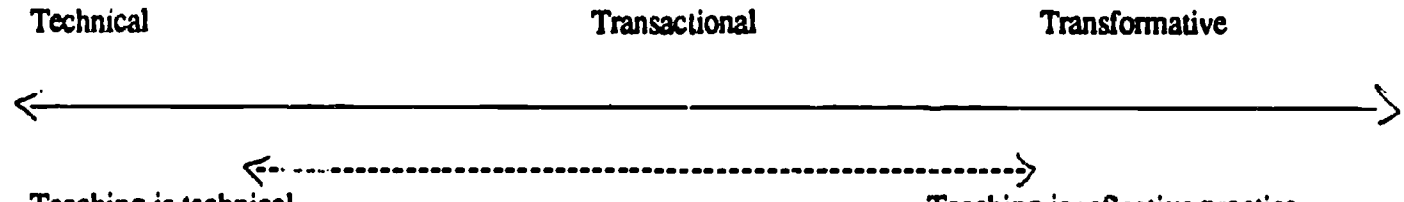
> AO: The teacher's role is a facilitator. She'll be around to the tables helping with her control paper (directions). She can give that up, and work with the group then. Like a lot of teachers that do really well just say, "If you have a question, make sure everyone in your group can answer that . Then ask."

> AA: Someone said, "Teaching is three quarters theater." Well, I don't believe that is true anymore. I think the kids have a much better theater in their own groups, or on their own activity. I don't have to be the one who makes everything happen in the class. Kids want to make it happen for themselves. That's why they no longer call my classes boring. If you involve kids, as cooperative learning involves kids, you get them going.

Only two or three perceived their role consistent with a transformative approach, possibly because the language related to constructing knowledge and the role of discourse within a community is still vague and somewhat foreign, but one teacher said:

> JS: Through that observation, you become informed about what that child is thinking, how he is putting the pieces together. You hear a little vignette here or there and you think, "Oh, that's what he's thinking," or "I see what he needs."

Conceptions of Decision making in Teaching



Bound with their ideas about control and authority and their roles as teachers were their conceptions about how they made decisions, how teachers ought to make decisions, and the latitude they had to make educational decisions. Cooperative learning required them to make many more decisions than they had before, or they were more conscious of the discrepancies between their intent, what they wanted to see happen in the class, and what actually had occurred. This is what made cooperative learning so risky. For teachers who had previously construed their role narrowly and technically, decision-making was a matter of trying to "get the situation right." For them, they had to begin to see that their what they relied on for their decisions before was no longer adequate to the new challenge. This was connected to how comfortable teachers were as practitioners who could reflect on their actions. Those who had a more complex construction of decision-making, more consistent with that described as a reflective-practitioner, generally welcomed the new decisions.

Teachers' constructions of decision-making differed considerably. Most of the teachers indicated that the program had given them a greater schema for interpreting and understanding learning. The language and concepts of cooperative learning training were particularly important to these teachers, enabling them to describe their previous tacit knowledge more intelligently and forcefully to themselves, students, colleagues and parents.

> AA: The class ran itself. The students ran the operation. I know more about individual kids now, primarily because I can go around listening to kids. I can find out what's going wrong and what's going right in the groups. (I'm getting more information) and I don't think I did that before. I don't think it mattered.

These teachers were aware of their *selective use* of cooperative learning. If the administration was not supportive, the size of the class not conducive, the number of preparations too many with too little time, or if there were other job demands (e.g., team teaching or job sharing), then they used their judgment about the conditions under which they could begin to use cooperative learning. These teachers had a sense of the latitude they had as experimenters, but the conditions had to be right.

> KM: What's changed for me are the details, the how to's, facilitating it, getting more kids doing more. I've always done groupwork, we've always talked over problems, I've always had expectations of how kids should be to each other in a classroom. This just makes it a lot easier. I don't hesitate to change strategies, but it's really important to me now not to put myself in extremely stressful situations by letting kids continue with something that is not working.

Decision-making was more often construed as choosing when or when not to use cooperative learning rather than how complex the collaborative environment should become over time. It was closely tied to beliefs about the nature of knowledge and knowing having both traditional and transactional characteristics:

> JA: If a teacher really understands that any model is just a framework for teachers to make good decisions about what strategy they are going to use, and really understands cooperative learning or other strategies, then in the course of planning the lesson, they'll make the decision about which strategy is the most appropriate to use. I don't want to see teachers using only cooperative learning. They've got to make the decision about which strategy is best for what they're working with at the time. If there is new knowledge, and there is information the teacher has that she wants to communicate to kids--new knowledge--then I don't think cooperative

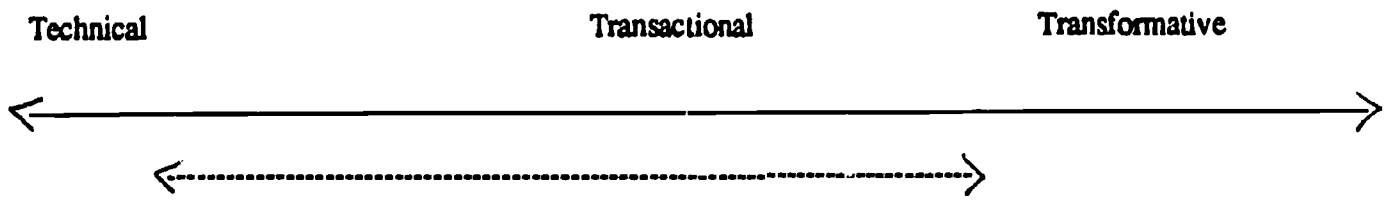
> learning is appropriate. You might start with some cooperative group generating, "What do you already know about this topic?" And use that or teacher information about what you need to do on your next step of helping them gain knowledge.

The teachers did struggle with the reflective process in their journal writing, due perhaps to a lack of agility with journal writing and perceived time constraints. Most teachers indicated that they had little time for reflection to determine how or why they knew what they were doing was "good teaching." Most exhibited a high degree of tacit knowing about their decision making, often indicating that they "knew" something was working but not "why" it was working but the cooperative learning program had given them a framework for understanding the range of options they had at their disposal and the nature of the decisions they would have to make. Several teachers were pleased that cooperative learning gave them more time to observe, assess and think about the learning process. They valued the time which groupwork carved out for "reflection-in-action."

They perceived that they have a great deal of control over factors leading to a sense of success as a teacher. Most of the teachers indicated that they were cognizant, yet modest about being regarded as "movers and innovators." They regarded cooperative learning as "natural" for them. They understood their own latitude as a teacher in relationship to students, administrators and colleagues and they generally believed that they could be successful as a teacher under many varying conditions. These teachers could best be described as "realistic risk-takers." One teacher said,

> AA: I know there are lots of teachers in the schools who have done a better job than I have at interpersonal communication individually--much more sensitive to kids' needs, problems, personal problems to solve. But I'm better than I used to be because of cooperative structures, much better.

Nature of knowledge and knowing



Knowledge is an objective body of information transmitted from teacher/texts to students.	Knowledge is dynamic and changing.	Knowledge is dynamic, changing and constructed.
"Knowing" emphasizes logical, linear paradigms	Knowing is in relation to knower, a process related to various modes of inquiry.	Knowing is multi-dimensional and contextual or situational.
	Knowledge involved development of intelligence, complex problem solving and learning social skills	New knowledge is the effect of community.
	Students share control of the learning.	Dialogue is central to creating a community. Students and teachers are co-authors, co-learners.
	Learning can occur within any number of academic frameworks.	
Covering curriculum is necessary instructional practice.	Depth is valued over breadth in curriculum.	

Implicit in teachers' discussions were fundamental assumptions about the nature of knowledge and how one comes to know what she/he knows. Most of the teachers expressed a view of knowledge and ways of knowing that indicated movement away from technical constructions of knowledge toward those generally consistent with the transactional view of knowledge, but this construct was the most difficult to grasp. Teachers had tenaciously traditional ways to constructing knowledge while at the same time they welcomed challenges to traditional forms of knowing. They saw themselves as co-learners and co-inquirers who looked to students to teach them about themselves and the curriculum. This view appears to be relatively well developed in over half of the 15 teachers interviewed. Most teachers talked about their own histories as those which had evolved from more traditional notions about knowledge, information and mastery to those which questioned these values.

> DB: In the early days...I was always the center, I was always the font of knowledge. I was the one that had everything, and I would have been in direct control. (Today) the amount of content that we cover becomes less important than the richness of the experiences that you give them...the breadth of experiences as opposed to the accelerated kind of thing which you get when you have people working pretty much by themselves, and you're the one in control. (Working with cooperative learning) someone will take (an approach) to solve a problem or something that I never though of in my entire life, that just is so different with the way that I would approach the problem, and it's a real awakening for me and just really expands my horizon.

Teachers discussed why it was not possible to "cover" curriculum as they had before their cooperative learning training. While almost all the teachers had already confronted the issue of "depth over breadth" in the curriculum before beginning cooperative learning, many indicated that it took on a new meaning and purpose after using cooperative learning. They indicated a preference for depth over breadth, toward greater understanding of ideas by students and themselves.

> JS: "Covering the curriculum" to me is tantamount to saying, "I taught it, I hope they learned it." My understanding of cooperative learning is that it sits "beside" the curriculum at this point.

Many said that the synergy of the group produces complexity in both knowledge and knowing and potentially superior learning results. For these teachers dilemmas of practice became obvious with their personal decisions to ignore curriculum mandates to cover a certain amount of material. Most perceived these dilemmas as a matter of achieving some kind of a truce or balance between external mandates, pressures from their colleagues and their own beliefs about how children best learn.

Dialogue and student talk were useful for a variety of reasons but teachers tended to value the social benefits of dialogue and often pointed to the importance of "verbal rehearsal" time in a group. Very few teachers expressed a keen understanding of the nature of dialogue in creating a community of inquirers who constructed a curriculum together. This appears more as an intuitive belief or part of the tacit knowledge of only a few teachers but the theoretical understanding about how dialogue informs learning and a community of inquirers was a relatively new notion to most of the teachers except those who had, for example, a whole language philosophy or a clear understanding of cognitive developmental

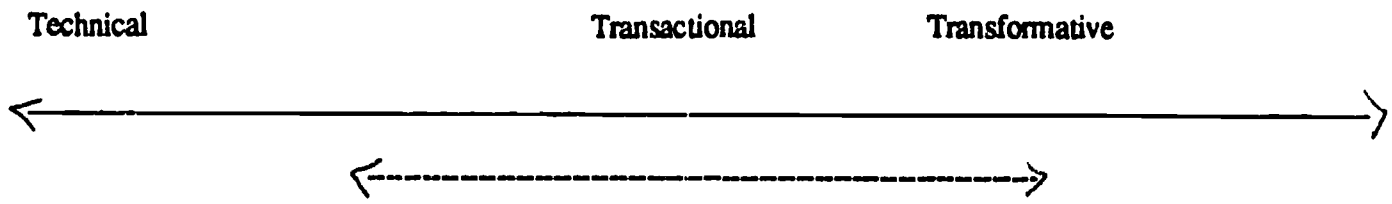
psychology. This teacher intersects issues of curriculum and control in her understanding of the value of capitalizing on student-directed inquiry:

> SC: I understand a little bit about the nuts and bolts of what's going on with kids, and the value or the non-value (of going off on tangents). So, whereas before I might have looked at some tangent that some kid would take, and say, "Why?" I feel I'm gaining some skills now and learning some things that will help me be able to look at that tangent, and say,"What's the potential for this? How can I take advantage of this opportunity to help create a situation that will help provide some learning for these kids?" When I go back into the classroom next year, I'm going to be attempting to create situations in which kids will pose their own questions and present their own conflicts, and go off in other directions. In my mind the challenge is, "How can I not just let that go off somewhere into the ozone and fade away; but how can I make it focus so that some learning takes place?"

Notions about "sharing the knowledge base with each other" relates to teachers' emerging beliefs that students can be sources of knowledge in the classroom. This teacher captures the tension between old and emerging beliefs:

> JD: (Discussing sources of knowledge): If we're talking about writing, it would be their group or their partner. Whoever they conference with is another source. The books they're reading. I try to get a connection between the reading and the writing and work with that. I am another source, because I bop around the room. I'm on a conferencing schedule with them all, so I'm another source. If it's spelling, it's their partner at school and their parents at home. I guess I am the final knowledge because I correct their review tests.

Conceptions of Cooperative Learning



Cooperative learning as a technique.	Cooperative learning is an ideal and a goal to be attained.	Cooperative learning is a philosophy whereby a set of values are explicit regarding relationships and learning, i.e., creating a community of learners who can engage in critical dialogue and inquiry.
Cooperative learning is one of several competing views of "good pedagogy."	Academic achievement is congruent with social goals and values.	
Cooperative learning is a technique to be mastered primarily to extend one 's tools for managing groupwork.	Cooperative learning provides a context for conversation in which teachers and students are learners together through a process of negotiation with the curriculum to develop a shared view of the world.	Cooperative learning is an entree into the exploration of the "possible" in education: participatory communities, classroom models of democracy, etc.
Teacher uses cooperative learning primarily for mastery learning, review, and for improved achievement test scores.	Cooperative learning fosters problem-solving, higher levels of thinking and prosocial behaviors.	C.L. requires a shift in sensibility about notions of control, the nature of knowledge and knowing, social relations and the effects of discourse and critical inquiry.
	C.L. requires a re-examination of best choices to make in the context of a particular classroom.	
Social learning and social values are implied but not usually made explicit in the form of student learning objectives.	Social goals are important and must be taught.	Social values and skills are generally made explicit but not necessarily practiced separately as in collaborative learning, where learning considered the effect of community and experience teaches.

How do teachers define cooperative learning; how do they alter the practice to fit with their belief systems; and how do they alter their belief systems based upon their understanding of this practice? These teachers self-selected into the program because it "made sense" to them in terms of a pedagogical framework already congruent with the generalized "ideal" of cooperative learning: we should promote academic and social development; in a realistic future teamwork is imperative; group investigation is a significant way to understand issues; world peace cannot be achieved unless we learn to cooperate; interpersonal and racial understanding are worthy goals for education.

DB: They (industry, business) want students to come out of the high schools and they want students coming out of the colleges that can work together cooperatively. You know, I think it's a pie-in-the-sky kind of thing, but when you look at it societally, and then you look at it globally, you've got a lot of work to do. People must work cooperatively.

JA: Our goals in education are far beyond the classroom--to prepare kids to be citizens in our society. When people fail on a job or aren't as productive members of society, a lot of it is related more to them not being cooperative people and not knowing how to be cooperative people, whether it's locally, or the whole global kind of society.

About half of the teachers indicated that cooperative learning was a philosophy which was an ideal or goal to be achieved. Others, who already had a strong commitment to a learner-centered classroom, viewed cooperative learning as a tool or an approach to realize what they had already envisioned as possible.

JS: I think that I have been able to do a better job of shifting power (the commitment) to who's making sense of knowledge, who's coming to a good understanding--to children, through cooperative techniques. And I suppose that from way back, that's been my hope, but I think that some of the strategy that I used in my own career, what was effective, is that I've been able to shift that more and more to children. Getting children to be responsible for their own learning, to find a joy in that. That's what I want them to do. I want them to feel powerful as learners.

When they began the program about half of the participants could be characterized as holding a technical view of cooperative learning: It was simply one of several competing views of good teaching; it was another technique to be mastered primarily to extend one's tools for managing groups. Even after the program, most of the teachers still relied upon cooperative learning primarily for mastery learning and review because they were still learning the process themselves. Perhaps because most of these were elementary teachers they had little interest in using cooperative learning to achieve improved test scores--although the fact that they could demonstrate improved academic results or explain their approach to others based upon the research on academic achievement, was important to them. Their primary attraction to cooperative learning was to improve classroom relations and class climate, but while they recognized that social learning and social values should be made explicit in terms of student learning objectives several of the teachers did not do that.

Only a few of the teachers were notably adverse to using the language and terminology of cooperative learning, perhaps because they consciously avoided jargon. These were teachers who referred to cooperative learning more as a tool than as a philosophy:

> KM: I think there are specific situations where those other things (other innovations in education) work very well, or are needed; so I find cooperative learning to be much more general, much more universal to the teaching experience.
>
> JS: I sometimes don't even tell them (the other teachers I am working with) that it's cooperative learning, not that I'm trying to hide it. It just doesn't occur to me to identify it.

This group of teachers was not likely to use extrinsic rewards with cooperative learning. About half did not like to use extrinsic reward structures at all, but found them necessary for the moment or until they could move students beyond them, or as a last resort, when they had a problem group of students who were difficult to focus and orient, such as new ESL students. Most preferred to rely upon the value structures of cooperation, social responsibility and teamwork to promote interdependence and learning. Many, however, did use some form of reward structures when they began using cooperative learning. In the last quarter of the program, the teachers were introduced to Slavin's TAI and CIRC models, having experienced the Johnsons' conceptual approach and Kagan's structural approach earlier. Almost to a one, they described a negative sense of self while participating in interteam competitions. Additionally, they responded negatively to the conceptions of knowledge and knowing upon which the math and language arts programs were predicated. They saw little evidence of problem-solving, opportunities for students to invent, create, critically think and construct their own meanings. They were disturbed by the standardized curriculum of the program, the lack of emphasis upon social values and the implicit use of competition to achieve academic ends. Only three people had been introduced to Slavin's approach before the program began and these were people who anticipated that cooperative learning was not a particular match between their constructions of authority, control and reward structures. Once they had worked with other, more conceptual models, did their value for cooperative learning

change. They were evidently assessing the models in terms of their congruency with their belief systems. One first grade teacher, whose basic epistemology was framed by a language experience and a child-centered learning philosophy, described her negative reaction to her first cooperative learning orientation through Robert Slavin within her district:

> JS: It was a kind of subject oriented, almost a programmed kind of thing, like his math. I visualized it as a good way to meet the needs of learners who were behind the norm, but that it was very subject-oriented and rather rigid....If I ever had just TAI, having to do that real structured stuff, you know, count up the points, that would not fit for me. I would pack it in. I try hard to stay away from sort of disciplining, or any of those really structured kind of things, and so I see something like TAI as being that kind of thing. That's doesn't interest me.

Richardson found that the filtering of a research-based practice through the teacher's personality and/or belief system altered the practice quite dramatically (Richardson, 1990 p. 15). We found the same thing with cooperative learning. For example, one of the elementary teachers volunteered for the program as the first staff development opportunity in which she had been interested in a long time. Having come from a large, ethnically diverse city years before she had come to value racial and ethnic harmony and understanding.

> I grew up in (city) and I learned to respect the values the Oriental kids had, and to learn the values the Mexican kids had, and there's a lot to learn from other cultures....I was in a mixed up neighborhood as a kid growing up. The high school I went to was half Caucasian and the other half was a mixture of all races, all colors. I just grew up like that.

When asked to describe how she used cooperative learning, she explained that she put her students in a group for the entire year because she wanted them to learn to "love one another. And they do learn to do that." This teacher had little interest in re-constructing the nature of knowledge, or even her own role in relation to the content; her primary goal was to foster a few close interpersonal relations among students. Everything that she wanted to know about cooperative learning centered around managing the groups so that there was as little disruption as possible with the greatest amount of harmony. Explanations regarding the practice of giving students opportunities to move to other

groups precisely so they could learn to work with a variety of people did not make sense to her given her interpretation of cooperative learning and her belief system. Students helping each other dominated her observations of her classroom and her ideal of what cooperative learning was. She revealed, however, that distinguishing individual activity from group activity was something she was not certain about:

> Cooperative learning is helping each other, and knowing you're responsible for helping somebody else. The kids do really help each other a whole lot; as a matter of fact, it gets so bad they help each other too much. They never stop. The few times I want them to do their own stuff, they're very helpful.

Because this teacher did not like students sitting in rows she was drawn to cooperative learning as a tool to help her manage that process of bringing children together; however, her views on knowledge are rather consistent with traditional notions of curriculum and content:

> You can't use (cooperative learning) 100% of the time, but I try to use it as much as I can. The daily oral language that they have to do, the way it's written up in the book, is for you to pick a child to come up and find one thing wrong in the sentence. Instead--these happen to be pretty easy sentences and the kids didn't have too much trouble with them--but, I'll pick two kids from the same team to come up and work at it. If they get stuck, like if I told them there is one more thing, they go back and consult with other members of their team, "Did you get all of them?" Then then earn points for all of their team up there.

Her notion of her role is drawn from the fact that "the curriculum is repeated so often through grade school and the middle years, that whatever they don't get, or have forgotten one way or the other, they'll get again." She describes herself as a facilitator: "I provide materials for you (the student) but whatever you learn is what you get out of it yourself." This teacher could not accept putting students in groups at the first of the year to observe and learn how they interact, because she "wants to avoid conflict" between students at all costs. At holiday time, she often puts them back in rows, because "that's when they all get a little bit crazy and that's the time when you want everybody doing their own thing, in little rows, and quiet things down because they get so excited this time of year."

This description suggests that for this teacher, decision-making centers on how to create harmony, how to foster love between students and how to invite students to partake of the learning which is offered. In order to move to other constructions of cooperative learning this teacher would have to be willing to address more systematically how students learn while holding onto her overarching value: making the world a better place by creating harmony between people.

This view was in contrast to other teachers who struggled over such issues as how often to change groups, when and why. Some teachers were looking for a formula when they began the program as to what constituted "best practice" but were interested with points of view within the group which challenged the prevailing expert advice. One middle school teacher spoke eloquently about the necessity of single sex groupings to her sixth graders. She held an ideal of heterogeneous grouping which did not match her sense of what was best practice for her students, particularly the girls, and considered this a dilemma of her practice. Thus, she also experimented with heterogeneous groups, but with an eye to building successful experiences for the girls who seemed to be at a continual disadvantage with the boys despite her best efforts at confronting this. Most of the other teachers considered it reasonable that this was an area of discretion which they had to consider in terms of the "why" of what they were doing and who the students were.

Another elementary teacher whose educational approach was congruent with an emerging transformative view also had one of the most extensive backgrounds in cooperative learning training. Her views of cooperative learning, and the nature of knowing in general demonstrate new configurations:

> SO: I'm working on how to use curriculum as a way of doing some team building. You present a a discrepant event, like Cartesian diver, or put an empty can on a hot plate and heat it, expelling the air, put a lid on it and watch it collapse. Then have the kids work together to try to figure out what happened. You have this wonderful lesson set up; but it's an exciting enough event, that in a sense, it would have the same effect as a team building exercise. This has me thinking about what kind of *academic* exercises could also be team building.

For this teacher decision-making is contextual and is a negotiated process between teacher and student, and student and student, and the teacher's reasons for why they are doing what they are doing. All must be considered within a standard of fairness and respect for students:

> SC: Regarding positive interdependence (as other teachers use it), I think it's easy to sort of threaten kids instead of encouraging them. Some of the ways that are suggested for creating positive interdependence, if you're going to average the test scores for kids in your group, I think that's a valid thing to do if you know your kids well enough, and you know where they are with regard to cooperation; and you know they'll see that as a fair thing to do. But if they haven't had some experience, enough experience to get them to a point where they view it as a fair thing, then you can have some real trouble, and create a lot of anger and hostility.

This is a teacher, in contrast to the former teacher, who constructs cooperative learning, quite literally, as "disagreement and conflict":

> For me that's been the scariest part of cooperative learning, and the most threatening part. It's inevitable, when kids sit down to work together that there's a lot of conflict. I have trouble dealing with conflict myself. So it's a real challenge to me to help kids deal with their conflict. The thing I'm trying to learn is that conflict is really good, and it's valuable. And trying to help kids see that is a big challenge.

In general teachers indicated changes in their conceptions of cooperative learning through the program. Many said they had underestimated the power of cooperative learning, mostly because they had few models to observe, and reflect upon. This raises one final theme which was significant for teachers' ability to continue developing in line with their expressed beliefs, that is, relationships with colleagues and the administration within their school.

Relations with Colleagues

Teachers were selected for the program by their administration as those who had already been conducting cooperative groupwork in their classrooms, and were those likely to continue cooperative work with their colleagues after the training. We had expressly asked that schools send teams of people because peer support is critical to sustaining and extending the practice once the training is finished. When these teachers were interviewed

6 months later only 3 of the 15 teachers felt they were part of an actively growing school community where teachers were working together to extend their understanding of cooperative learning. These were teachers whose principals had embraced cooperative learning, who held faculty meetings using cooperative principles, and who had or were participating in network opportunities outside their building. These were elementary school communities which had adopted cooperative learning as one of their building goals.

After the program, most teachers returned to their classrooms and continued to practice cooperative learning in relative isolation, although they were frequently sought out by colleagues who knew of their expertise. A few teachers continue to be trainers at their school or trainers-at-large. In only one elementary school where more than 50% of the staff were trained in cooperative learning and the principal was aspiring toward a cooperative school, did teachers experience a dramatic change in relationships with their colleagues. They talked about an increased enthusiasm for teaching and a general improvement in school climate. These teachers reported notably easier second and third years with cooperative learning because they had a peer support system. They hypothesized that students were now coming along who had been in cooperative classrooms for more than one year, and that their prosocial development was evident. Teachers, however, who did not actively seek opportunities to extend and explore their understanding of cooperative learning outside of the school, either through networks, or other training programs, tended to devote the same percentage of time to cooperative groupwork as they had during the 9 month training program.

A significant issue tangentially raised in this study was the distance cooperative learning can create between teachers within a school, between those who have adopted this practice and those who do not. For example, I observed a poignant moment when a middle school teacher who was participating in a year-long cooperative learning training expressed to his colleagues the issues which cooperative learning raised for him in terms of control, authority and knowledge construction. He spoke informally to his fellow teachers about

how cooperative learning had changed his understanding of everything he was doing and how he was coming to appreciate what it meant to embrace this practice as a philosophy. His colleagues listened politely but disinterestedly to his enthusiastic testimony. Afterward, in private, he expressed his fears of going back to work, alone, in an environment where he was tentative about how to speak with his colleagues. His principal had expectations for him to work with other teachers, but what did it mean? Was he a "change-agent" who had a responsibility to both students and his colleagues? What was his role now? One might argue that any new practice which is adopted by certain teachers and not others can breed suspicion and alienation particularly when different epistemologies are involved, depending upon the context for development and support. Indeed, these divisions already exist among teachers who hold different constructions of education as represented herein, but the first wave of teachers new to cooperative learning within a building may need to have a strong sense of efficacy, as the teachers in this study, in order to withstand the internal and external contradictions which arise as they adopt this pedagogy.

CONCLUSIONS

The teachers in this study held a remarkably similar range of beliefs about the pedagogical themes which emerged during the 9 month training in cooperative learning. Their views about education were consistent with a transactional approach; however, most of the teachers were in transition, that is, they held beliefs and values about the nature of knowing, issues of control, decision making and cooperative learning indicative of traditional thinking but with emerging values consistent with transactional values. They were attracted to cooperative learning precisely because they held tacit transactional beliefs *before* they began the cooperative learning program. In a few cases, teachers reflected transformative views of these pedagogical themes, but these were people who already held well articulated philosophies regarding whole language, child development and political change.

Designed to provide a context for critically assessing the current models of cooperative learning, teachers were asked in t' program to selectively master, practice, reflect and integrate cooperative learning into their existing teaching repertoire. Although all the teachers in cooperative learning training program had had previous training in cooperative learning, even those teachers who were currently using cooperative learning more then 30% of the time in their classrooms (only 4 teachers) indicated that they had underestimated the power of cooperative learning to transform the social relations of the classroom and to promote the goals to which they aspired but had held off as difficult to achieve. Most of the teachers revealed complex constructions of ideas connecting cooperative learning to authority, control, the nature of knowledge and knowing, teacher's role and decision making. Almost all these teachers would be characterized as the "movers and shakers" of a school and their self-selection into the training is an index of their commitment to innovate and grow. Their level of concern about implementation was sufficiently high that it has raised questions about the design and implementation of cooperative learning inservice training which should undergo further study and investigation.

Teachers said that they needed support to continue evolving their conceptions of cooperative learning. Some teachers were more cognizant of developing their practices such that they became more congruent with their ideal vision of a cooperative classroom, others needed a safe environment in which to explore what an ideal cooperative classroom would be for themselves. Many had no other forum to resolve some of the dilemmas associated with experiences which arose and frustrated them, and they had to rely upon their well-honed, intuitive sense of what worked and did not work. Not often addressed are the connections between the educational assumptions implicit in the innovation itself and those of the teacher engaged in the adoption of the practice. Inservice programs should encourage teachers to critically examine the innovation in light of their existing beliefs, assumptions and dilemmas of knowing which the innovation poses for them. For each

particular teacher who is part of the vanguard of this kind of change, the dilemmas of practice are so many that they do need a cadre of fellows to work through the contradictions, including the inevitable shifts in relations among a staff. They need support in undergoing a profound shift in beliefs about teaching and learning which run counter to the existing status-quo and which makes dialogue between colleagues necessary but problematic and difficult.

Implications for Inservice Training

As a result of this experience and several others since, we are continually evaluating our approach to inservice training. We remain committed to collaborating with teachers to reflect on their practice, to question their implicit assumptions, and to make explicit their tacit knowledge and beliefs. In order for this to happen a number of elements have to be present from the start (Berkey, 1990).[1]

Participation in any cooperative learning training must be voluntary. Given the level of risk which cooperative learning represents and the personal risk which is associated with reflective practice, each teacher should decide whether this approach is compatible with his or her interests and beliefs.

Those designing any inservice training should enter with a deeply held respect for teachers' knowledge and teachers' abilities to direct their own growth. Cooperative learning increases the number of decisions that a teacher must make and consequently is perceived as very risky, but teachers have a set of educational assumptions which must be initially respected if they are going to change. The teacher should direct the decision making process and initiate any changes they make in their practice. Practitioners should expect and be prepared for the ways teachers will modify the practice to bring it into alignment with existing beliefs. Without a fundamental respect for teacher's knowledge, we cannot learn from them and with them about the "why" of their practice.

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[1] The following is consistent with the recommendations of Berkey and associates as described in their article, "Collaborating for reflective practice: (see reference).

Issues of control relating to the innovation itself, the context of the change, teachers histories and biographies, and the nature of the learning situation should be considered as "text" for the process of change, recognizing that the practice under consideration may be altered quite dramatically due to teachers' beliefs, and that these beliefs may be subject to socially negotiated processes respectful of conceptual change. Innovations or practices which represent great departures from teachers' educational beliefs may pose particular contradictions and dilemmas for teachers which may only be resolved through a dialogical and supportive context, with opportunities for making educational orientations explicit. Further study must be done on whether certain models of cooperative learning represent such great departures for teachers' beliefs that they may be categorically rejected by these same teachers.

Teachers need several years of sustained support without administrative interference. This support could be informal or formal but it should be directed to developing cooperative, collegial communities of teachers and administrators who can transform their own relations with each other as they are transforming their classrooms. Site based training with base groups for support may be the ideal model, but too few schools are actually providing long-term training and support. In lieu of that, teachers committed to integrating cooperative learning into their classrooms need another long-term context in which to reflect upon their practice, such as a college/university, educational service program, or professional network.

Reflective practice is difficult, new and risky for teachers. In order to facilitate reflection, teachers need time to engage in a level of reflection; they must cultivate trust and respect for one another so that they can interact openly with each other. Teachers need support in writing their thoughts, in hearing their own voices, and in recognizing that conflict is a natural consequence of bringing people together.

The value base of cooperative learning should be made explicit early in the program. Experienced teachers want to know how the particular training model addresses

teacher decision making, the nature of knowledge, socially responsive values, their sense of authority and control. Cooperative learning is not value free and the different approaches to training promote different conceptions of cooperative learning, the nature of knowledge, control and decision making. Teachers new to cooperative learning want to know the range of decisions they must be willing to make in order to adopt cooperative learning.

Implications for Further Research

This exploratory study raised many questions about how teachers interact with an innovation which challenges their fundamental assumptions about teaching and learning. While we learned something about how teachers both assimilate and accommodate a practice based upon their existing beliefs, it also demonstrates the need for additional descriptive data, regarding both cognition and actual practice, of teachers who are identified as practicing cooperative learning from each of the three broad epistemologies described earlier. In addition, there is a need to investigate teachers' beliefs at the beginning of cooperative learning training, following changes in these epistemologies over a longer period of time than this study was able to do. What is the effect of colleagues on whether one continues to develop cooperative learning or not? How do teachers decide to accept or reject a particular model of cooperative learning? We also need a thorough investigation about the congruency of cognitive changes and actual practice through ethnographies of classrooms designated as cooperative learning environments.

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